



Horticultural
Development
Company

New Project

SF 97

Detection and quantification of
Verticillium dahliae and *V. albo-*
atrum in soils to determine risk
of Verticillium wilt in strawberry

Project Number: SF 97

Title: Detection and quantification of *Verticillium dahliae* and *V. albo-atrum* in soils to determine risk of Verticillium wilt in strawberry

Start and end dates: 1 April 2009 to 31 March 2012

Project Leader: Dr Jeff Peters, CSL

Project Co-ordinator: Dr Neil Boonham

Location: Central Science Laboratory, York

Background and project objectives

This project seeks to improve disease control and to extend the development of a rapid, affordable and accurate diagnostic test for verticillium wilt pathogens affecting strawberry. This will permit routine pre-planting soil testing for specific soil-borne *Verticillium* species. The current method for detecting and enumerating *Verticillium dahliae* in soils, the Harris test, costs around £165 + VAT and takes 6-8 weeks from sample receipt to reporting. The proposed molecular diagnostic test will quantify the amount of target pathogen DNA in a few days for around half the price of the conventional test.

This work focuses on refining quantitative PCR assays for *Verticillium dahliae* and *V. albo-atrum* (Vaa), causes of strawberry wilt. The project aims to establish the relationship between disease levels and soil-borne inoculum as measured by the quantitative molecular tests (QPCR). This will include establishing tentative *V. dahliae* inoculum density thresholds for three strawberry varieties that differ in verticillium wilt susceptibility, above which it is probable that verticillium wilt symptoms will develop. There is potential to extend the test to other fruit crops susceptible to verticillium wilt (e.g. blackberry, raspberry).

In addition, some *Verticillium* species, particularly Vaa, survive in soil in the form of saprophytic mycelium. Currently no test exists for the detection and enumeration of Vaa in soil because the Harris test utilises a sieving method which detects only microsclerotia. Consequently, the role and importance of Vaa in causing strawberry wilt is poorly understood. The proposed molecular methods will detect microsclerotia and hyphal propagules of both target *Verticillium* species.

Further information

Email the HDC office (hdc@hdc.org.uk), quoting your HDC number, alternatively contact the HDC at the address below.

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